

08/25/00
JC915 U.S. PTO

8/28/00

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U.S. Express Mail Label No. EL531624075US

Docket No. 230074.0230

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TO: Assistant Commissioner for Patents
Box Patent Application
Washington D.C. 20231

JC857 U.S. PTO
09/648502
08/25/00

UTILITY PATENT APPLICATION TRANSMITTAL UNDER 37 C.F.R. 1.53(b)

Transmitted herewith for filing is the patent application of:

**INVENTOR(S): Mark Redding, Logan Badia, Sandeep Handa, Hemant Sharma,
Sanjay Chopra, Rana Gupta, and Poonam Lal**

**TITLE: LICENSE MANAGEMENT SYSTEM AND METHOD
FOR COMMUTER LICENSING**

In connection with this application, the following are enclosed:

APPLICATION ELEMENTS:

- ☒ Specification (including Abstract): 28 pages
 - ☒ Claims: 19
 - ☒ Informal Drawings: 4 Sheets
 - ☒ Power of Attorney By Assignee and Exclusion of Inventor Under Rule 37 C.F.R. § 3.71
 - ☒ Declaration Under 37 C.F.R. § 1.63
 - ☐ Unsigned
 - ☒ Executed (original or copy)
 - ☐ Copy from a prior application (37 CFR 1.63(d))
- (relates to continuation/divisional boxes completed) - NOTE: Box below

ACCOMPANYING APPLICATION PARTS:

- ☒ Assignment Papers (cover sheet & document(s))
- ☐ Revocation and Power of Attorney
- ☐ Information Disclosure Statement(IDS) with PTO-1449.
 - ☐ Copies of IDS Citations
- ☐ Preliminary Amendment
- ☒ Check No. 13003 in the amount of \$690.00 for filing fee.
- ☒ Check No. 13382 in the amount of \$40.00 for filing fee.
- ☒ Certificate of Mailing By Express Mail
- ☒ Return Receipt Postcard (MPEP 503)
- ☐ Small Entity Statement(s)
 - ☐ Statement filed in prior application, status still proper and desired.
- ☐ Certified Copy of Priority Document(s) with Claim of Priority (if foreign priority is claimed).

CONTINUING APPLICATION, check appropriate box and supply the requisite information:

- ☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application Serial No.

_ Amend the specification by inserting before the first line the following sentence: --This application is a
continuation, _ divisional or _ continuation-in-part of application Serial No. __, filed __.--

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FEE CALCULATIONS: (Small entity fees indicated in parentheses.)

(1) For	(2) Number Filed	(3) Number Extra	(4) Rate	(5) Basic Fee \$690. (\$345.)
Total Claims	19 -20 = 0	0	x \$18 (x \$9)	0.
Independent Claims	2 -3 = 0	0	x \$78 (x \$39)	0.
Multiple Dependent Claims: 0			\$260 (\$130)	0.
Assignment Recording Fee per property			\$40	40.
Surcharge Under 37 C.F.R. 1.16(e)			\$130 (\$65)	0.
			TOTAL FEE:	\$730.

METHOD OF PAYMENT:

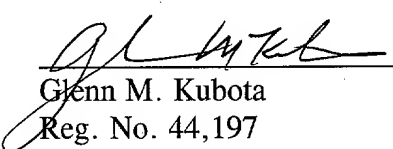
Checks Nos. 13003 and 13382 in the amounts of \$690.00 and \$40.00 are attached. If payment by check is NOT enclosed, it is requested that the Patent and Trademark Office advise the undersigned of the period of time within which to file the TOTAL FEE. If payment is enclosed, this amount is believed to be correct; however, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-0872. A duplicate copy is enclosed.

Respectfully submitted,

August 25, 2000

Date

015.431989.1


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Reg. No. 44,197

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Attorney Docket No. 230074.0230

Mark Redding, Logan Badia, Sandeep Handa,
Hemant Sharma, Sanjay Chopra, Rana Gupta
and Poonam Lal

Group Art Unit: Unassigned

Serial No.: Unassigned

Examiner: Unassigned

Filed: Concurrently herewith

For: LICENSE MANAGEMENT SYSTEM AND METHOD FOR COMMUTER LICENSING

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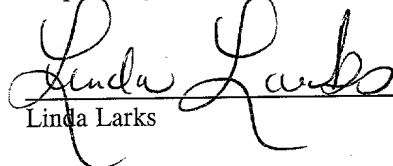
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1. Utility Application Transmittal in duplicate
2. Specification, Claims and Abstract: 28 Pages
3. Informal Drawings: 4 sheets
4. Declaration Under 37 C.F.R. § 1.63 (3 parts)
5. Power of Attorney By Assignee and Exclusion of Inventor
6. Check No. 13003 for \$690.00 for filing fee
7. Assignment (3 parts), Recordation Sheet, Check 13382 for \$40.00 for recordal fee
8. Return Postcard

Respectfully submitted,


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August 25, 2000
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PATENT APPLICATION IN THE U.S. PATENT AND TRADEMARK OFFICE

for

**LICENSE MANAGEMENT SYSTEM AND METHOD FOR
COMMUTER LICENSING**

by

**Mark E. Redding, Logan A. Badia, Sandeep Handa, Hemant Sharma,
Sanjay Chopra, Rana Gupta, and Poonam Lal**

Cross-Reference to Related Applications

Embodiments of the present invention claim priority from Provisional
Application Serial No. 60/152,785, filed September 3, 1999, and are related to U.S. utility
patent applications entitled "License Management System And Method With Multiple License
Servers", Attorney Docket No. 230074.0227, filed _____; "License Management System
And Method With License Balancing", Attorney Docket No. 230074.0228, filed _____; and
"System And Method For Selecting A Server In A Multiple Server License Management
System", Attorney Docket No. 230074.0229, filed _____. The contents of each of these
applications are incorporated by reference herein.

Background of the Invention

1. Field of the Invention

The present invention relates, generally, to license management systems and
processes for managing licenses on a computer network and, in preferred embodiments, to
such systems and processes involving a pool of license servers for managing software licenses
among one or more users on the network, and for granting authorizations to use protected
software programs to client computers that may become temporarily disconnected from the
network.

2. Description of Related Art

The increasing popularity of computer usage in homes and businesses, as well as in governmental, research and education institutions, has brought about a world-wide demand for greater software variety and sophistication. Indeed, the software development industry in most industrialized countries has shown substantial growth in recent years and is expected to show continued growth through the next decade.

However, as software sophistication increases, development costs associated with such software also tend to increase. Modern software programs can require months or even years of development, often involving expensive resources and teams of highly skilled engineers and programmers, before a product may be readied for sale or license. Thus, software development companies are often required to make large investments early in the development of their products, in the hope that the products will provide a volume of sales or license revenues sufficient to cover their development investments and generate profits.

Illegal software usage and piracy have become a significant problem to software development companies. Because of the nature of computer software, illegal usage and illegal copying of proprietary software programs can be difficult to detect or deter. The increasing usage of computer networks has added to the problem. Computer networks can allow multiple users to access and copy software stored by a common network program server or copy and pass software between each other, over the network. A legitimately purchased or licensed copy of a software program available on a network could result in many illegitimate usages or copies by unauthorized or unlicensed users having access to the network.

Various forms of encryption techniques have been developed to inhibit usage of encrypted software by unauthorized users that do not possess a decryption program or key. However, such techniques typically require each authorized users to obtain or be passed a decryption program or key, in advance of usage of the encrypted program. Accordingly, such techniques can be prohibitively inconvenient for some computer and network environments, where it is difficult or impractical to supply each authorized user with a decryption program or key or to decrypt a program for each user or usage.

Other software protection techniques have required legitimate or authorized users to have a special hardware device or circuit installed in or plugged into their computer, prior to usage of the protected software. See, e.g., U.S. Patent No. 4,446,519 to Thomas. Again, such techniques can be prohibitively inconvenient for some computer and network environments. For example, if the network environment is such that the authorized user must use multiple computers on the network, then each computer must be provided with the special hardware device. Moreover, if the environment is such that computers having the special hardware device are not located in secure facilities, then unauthorized users may be able to access the protected software by using the non-secure computer in which the special hardware device is installed.

Accordingly, more sophisticated license management software has been developed for managing software licenses for computer networks, which do not require encryption of the protected software or special hardware devices in each authorized user's computer. For example, the assignee of the present invention, Rainbow Technologies, Inc., has marketed versions of a license management system under the trademark, SENTINELLM™. The SENTINELLM™ systems operate with a license server connected to a network of users. The license server stores and manages software licenses for the network users, in accordance with a license management program stored on the server. Each copy of a protected software program on the network is accompanied by a program code corresponding to a shell (also known as "wrapper") or library of Application Program Interface (API) functions, which communicates with the license management program on the server. When a user starts to run the protected software program, the shell code or library of API functions provided with the program communicates a request to use a license to the license server, over the network. The server, under the control of the license management software, responds to the request to determine whether it is storing an available license for the protected software program. If so, the server communicates an authorization message to the user and decrements a count of available licenses stored by the server. If not, the server communicates another message to the user, indicating that no licenses are available. In this manner, licenses are always stored and managed on a network license server. Each network user may have a copy

of a protected software program, but must communicate with the license server for authorization to use the protected program.

License management systems which employ a license server, as discussed above, provide significant advantages with respect to the freedom to readily add, delete or change authorized users on the network, and the ability to readily control and alter licensing schemes (for example, to add or delete licenses or change conditions for licenses) by modifying only the license server files or programs. However, if all licenses are stored and managed in a single license server, failure of that server can result in a failure of the entire license management system. Accordingly, prior versions of the SENTINELLM™ systems include multiple license server capabilities, wherein two or more license servers are provided on the network, each having a pre-loaded license file and a license management program. One of the servers may be designated as a primary license server, while the others are designated as backup servers. If the primary server cannot be reached by a user, for example, because the primary server has crashed or otherwise gone down, the user may then communicate with a backup server to obtain an authorization message. The backup server, having a pre-loaded copy of the license file and the license management program, may then take over the license management functions.

Alternatively, in other prior versions of SENTINELLM™ systems, a shell program or library of API functions could be configured to send a general poll to all servers coupled to the communication channel on which the poll is sent. In response to a general poll, any server computer having a license file containing license information corresponding to the protected software program (whether or not the license information indicated that a license is available) would send a reply to the requesting client computer. The shell program or library of API functions associated with the requesting client computer would then respond to the first reply received from a license server having a license file storing license information for the protected software program. If the replying license server contains an available license for the protected software program, the replying license server provides an authorization message to the requesting client computer. If the replying license server does not contain an available license for the protected software program, the replying license server provides a message to

the requesting client computer indicating that authorization to run the protected software program has not been granted. Such a system provides a degree of protection against system failure, in the event that one of the license servers crashes or goes down. The down server computer would not respond to the poll, but other server computers having appropriate license information in their license file would respond to the poll, thus, allowing the client computer to continue to seek authorization to run the protected software program, even though one of the servers was down.

While the above SENTINELLM™ systems have operated well in many contexts, each license server operates somewhat independent of other license servers.

Accordingly, there is a need in the industry for improvements in connection with management and coordination of multiple license servers (or a pool of license servers) in software license management systems for computer networks.

Summary of the Disclosure

Therefore, it is an advantage of embodiments of the present invention to provide a license management system and method for more efficiently managing licenses on a network using a pool of multiple license servers.

It is a further advantage of embodiments of the present invention to provide a system and method for managing licenses on a network that allows a client computer to request and receive a commuter authorization from a license server while connected to the network, allowing the client computer to run a protected software program even if the client computer should become disconnected from the network.

It is a further advantage of embodiments of the present invention to provide a system and method for managing licenses on a network that allows a client computer to request and receive a commuter authorization from a license server while disconnected from the network, allowing the client computer to run a protected software program while disconnected from the network.

These and other advantages are accomplished according to a system for managing licenses for protected software on a communication network. The system includes at

least one client computer that is capable of being coupled to or decoupled from the communication network. While coupled to the communication network, a user of the client computer may request a commuter authorization to use the protected software. At least one license server is also coupled to the communication network. Each license server is
5 programmed for managing a distribution of allocations to use the protected software. In addition, at least one of the license servers is programmed for granting a commuter authorization in response to a request for a commuter authorization from a client computer if there is an available authorization. After a commuter authorization is received by a client computer, the client computer stores a commuter authorization lifetime representing a time
10 period for which the commuter authorization is valid. The client computer may then use the protected software while coupled to or decoupled from the communication network until the commuter authorization lifetime expires.

These and other objects, features, and advantages of embodiments of the invention will be apparent to those skilled in the art from the following detailed description of
15 embodiments of the invention, when read with the drawings and appended claims.

Brief Description of the Drawings

FIG. 1 is a generalized block diagram representation of an example network environment according to an embodiment of the present invention.

FIG. 2 is a generalized representation of a redundant license file (RLF) for the
20 network environment of FIG. 1 according to an embodiment of the present invention.

FIG. 3 is a generalized representation of a license code contained in an RLF of FIG. 2 according to an embodiment of the present invention.

FIG. 4 is a generalized representation of a license code contained in an RLF and copied into a license table and a distribution table within a single license server for the network
25 environment of FIG. 1 according to an embodiment of the present invention.

FIG. 5 is a generalized representation of an initial state of distribution tables of leader server A and follower servers B and C in a server pool comprising three license servers according to an embodiment of the present invention.

FIG. 6 is a generalized representation of distribution tables of leader server A and follower servers B and C in a server pool comprising three license servers in the example of FIG. 5 after an authorization has been granted by follower server B according to an embodiment of the present invention.

5 FIG. 7 is a generalized representation of the distribution tables of leader server A and follower servers B and C in a server pool comprising three license servers in the example of FIG. 6 after a commuter authorization has been granted by follower server C according to an embodiment of the present invention.

10 FIG. 8 is a generalized block diagram representation of an example network environment illustrating the storing of commuter authorization information according to an embodiment of the present invention.

Detailed Description of Preferred Embodiments

15 In the following description of preferred embodiments, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the preferred embodiments of the present invention.

20 Preferred embodiments of the invention relate to a system and process involving a pool of license servers for managing licenses to, for example, one or more protected software programs, files or other data structures, among one or more users on the network. Protected software may include, but is not limited to, for example, a software program, such as a word-processing program, a graphics program, a computer game, etc., a proprietary file or other data structure, such as a data-base or other form of data, as well as other software encoded information or instructions, for which the control of user access is desired. For purposes of
25 simplifying the present disclosure, the protected software used in the following examples is one or more proprietary software programs.

According to a preferred embodiment of the present invention, the plurality of license servers are managed in accordance with a server pool scheme, as controlled by a

license management program associated with each license server computer and the shell program or library of API functions associated with each copy of the protected software program. In preferred embodiments, the pool of license servers comprises three to 11 servers. However, it should be noted that alternative embodiments of the present invention are not limited to any particular maximum number of license servers. In addition, in further alternative embodiments, multiple pools of license servers can reside on a single network. In further alternative embodiments only a single license server is required for issuing commuter authorizations. However, for purposes of illustration only, embodiments of the present invention will be described herein with reference to a pool of three license servers.

10 An example hardware environment for an embodiment of the present invention is illustrated, generally, in FIG. 1. With reference to FIG. 1, a computer network 10 includes a plurality of user or client computers 12 and three license servers 14, each coupled for communication over a communication network link, generally referenced at 16. The plurality of client computers 12 are identified as "Client 1", "Client 2", and "Client N", and the plurality of license servers 14 are labeled as "Lic. Server A", "Lic. Server B", and "Lic. Server C." Embodiments may employ any suitable number of client computers 12 and any suitable number of license servers 14. Also, while not shown in FIG. 1, the network 10 may include additional components, including one or more program or file servers, routers and/or other well known network devices and resources.

20 Each client computer 12 preferably includes a suitable processor and associated transient memory, such as a RAM, for running a protected software program. The client computer may be part of a standard personal computer (PC), network terminal, workstation or the like. In one preferred embodiment, each client computer 12 is coupled to a persistent program storage memory device 18, which may include, but is not limited to, a hard disc drive, floppy disc drive, tape drive, CD-ROM or the like, having a computer readable medium on which the protected software program is stored. Also stored as part of the protected software program is additional program code, such as code corresponding to a shell or library of API functions as discussed above, for communicating with the server computers which are

under control of a license management program, in accordance with communication functions discussed below.

Each license server 14 preferably includes a suitable processor and associated transient memory, such as an RAM, for running a license management program as described herein. In addition, each license server 14 is coupled to one or more persistent program storage memory devices 20, which may include, but is not limited to, a hard disc drive, floppy disc drive, tape drive, CD-ROM or the like, having a computer readable medium on which a license management program 22 and a redundant license file (RLF) 24 are stored.

An example embodiment of an RLF 24 is shown in FIG. 2 as containing license codes 26 for proprietary software programs A, B, C, etc. Each license code 26, in one example embodiment, comprises a string of data relating to license policy and the software program to which the license policy applies. In preferred embodiments, license codes 26 for software produced by more than one vendor may reside within the same RLF 24 of the same license server 14, and may be managed with a single process (execution of the license management software) running on a single license server 14. Thus, any given licenser server 14 does not need to have multiple license management processes running to manage licenses for multiple protected vendor applications. Instead, only one license management program needs to be running on a given license server 14, to manage licenses for protected vendor applications managed by that license server.

In the example embodiment of FIG. 3, a license code 26 comprises a data string defining multiple records or fields R1, R2, R3 ... RN, wherein each record corresponds to an attribute associated with the license policy, the software program to which the license policy applies, or other information. In preferred embodiments, each license code 26 includes at least one attribute associated with a license policy, the number of allocations for using the protected software program, and at least one other attribute associated with the identity of the protected software program. The number of allocations for using the protected software program is the maximum number of users that can be running the protected software program at any one time, and is also referred to as the ceiling or hard limit. In preferred embodiments, license code 26 also includes a flag which determines if commuter licensing functionality, described herein, is

enabled or disabled for the corresponding protected software program. This flag allows the software developer to make commuter licensing available only to selected customers. Data associated with a license policy preferably includes data representing the expiration date or expiration time of the license, as granted by the licensee (e.g., the protected software program's owner or developer).

For purposes of illustration only, in the example of FIG. 4 only one fictional license code 26, identified as "Application v1.0," is stored in the RLF 24 of a license server 14, with a hard limit of 100 total allocations distributable across all license servers 14 (see reference character 28). In preferred embodiments, another attribute of the RLF 24 is the IP address 32 for each license server 26. Another attribute of the RLF 24 is the distribution of the 100 allocations across all the license servers 14. This distribution is identified as the initial distribution 30, and is configurable by the network administrator. In the example of FIG. 4, an initial distribution 30 of A:39, B:30, C:30, indicates that 39 allocations will initially be assigned to license server A, 30 allocations will initially be assigned to license server B, 30 allocations will initially be assigned to license server C, and one allocation will initially be assigned to the free pool 48. This initial distribution 30 also signifies that the pool will comprise three license servers.

In preferred embodiments of the present invention, each RLF 24 stored in each license server 14 is an exact copy of every other RLF 24 of license servers in the pool. Thus, attributes of the license code 26 such as the expiration date or number of allocations need not be passed between license servers 14 in response to a request for authorization to use a protected software program from a client computer 12, because an exact copy of the license code 26 has already been stored on the hard disk of each license server 14 prior to the startup of that license server 14.

Each license server 14 operates, under the control of its associated license management program 22, to perform license management functions in association with data contained in the RLF 24, as described herein. Thus, when a particular license server 14 is started, the license server 14 loads the contents of its RLF 24 into a license table 34 in RAM or other memory and reads the license table 34, which identifies that server as a license server 14.

It should be noted that in preferred embodiments, the license table 34 is never modified. In addition, the contents of the RLF 24 is loaded into a distribution table 36 in RAM or other memory, and the initial distribution 30 is further copied into another record, distinct from the license code 26, identified as a current distribution 40. Unlike the license table 34, the distribution table 36 changes its current distribution 40 over time, to keep track of current allocations.

It should be noted that in the example of FIG. 4, only 99 of the 100 allocations have been initially assigned by the network administrator. If the network administrator makes an initial distribution that does not equal the hard limit of allocations (see reference character 28), in preferred embodiments of the present invention the extra allocations will be put into a free pool 48 maintained within the distribution table 36. Thus, in the example of FIG. 4, one allocation is put into free pool 48. If, on the other hand, the network administrator makes no initial distribution 30 of allocations in the RLF 24, preferred embodiments will divide the allocations evenly over the number of servers in the pool, and any extras will be put in the free pool 48. For example (but not illustrated in FIG. 4), if no initial distribution 30 was assigned by the network administrator, information representing an even distribution of A:33, B:33, and C:33 would be stored in the initial distribution attribute 30 of the RLF 24, and when a particular license server 14 is started, the RLF 24 would load an even distribution of A:33, B:33, and C:33 into the current distribution attribute 40 of distribution table 36, and would load a value of one into the free pool 48.

In preferred embodiments of the present invention, when the license servers 14 in the server pool are started up, one of the license servers is designated as a leader server. Selection of a leader server is described in a related U.S. utility application entitled "System and Method for Selecting a Server in a Multiple Server License Management System," attorney docket no. 230074/0229, filed _____, the contents of which are incorporated by reference herein. Other license servers 14 are designated as follower servers. The leader server always maintains a global picture of the current distribution of allocations within every license server 14 the server pool.

For purposes of illustration only, FIG. 5 illustrates an example of the distribution tables 36 for a three server pool consisting of license servers A, B, and C. Assume, for this illustration, that all three license servers have been started up, and that license server A has been designated as the leader server, and B and C as the follower servers.

5 Further assume that the hard limit of allocations for the software program Application v1.0 is 100, as indicated by the hard limit record 28 associated with the license code 26 for Application v1.0 within each distribution table 36. In addition, assume that the current distribution of allocations is 39 on leader server A, 30 on follower server B, 30 on follower server C, and one in the free pool, as indicated in the current distribution record 40 and the
10 free pool 48 associated with the license code 26 for Application v1.0 within each distribution table 36.

Note also that in the embodiment of FIG. 5, associated with each license code 26 is a record for available allocations for each server in the pool (see reference character 38), a record for available allocations for all servers in the pool (see reference character 44), and a
15 record for allocations currently in use for each server in the pool (see reference character 42). The allocations in these records are values which are incremented or decremented as authorizations are issued, returned, or borrowed. It should be understood that the records identified by reference characters 28, 38, 40, 42, and 44 in FIG. 5 are associated with a particular license code 26, but are distinct from it.

20 As indicated in FIG. 5, in preferred embodiments of the present invention, the structure of the distribution tables 36 will be the same for both the leader server A and follower servers B and C, but only the distribution table 36 for leader server A (the leader distribution table) will reflect the allocation status of the other license servers 14 in the server pool. In contrast, the distribution tables 36 for follower servers B and C (the follower
25 distribution tables) will only reflect the allocation status of that particular follower server, as indicated by the X (don't care) designations in portions of the follower distribution tables.

When a user at a client computer 12 desires to run Application v1.0 from a follower server, such as follower server B, for example, the client computer 12 may first load some or all of the protected program into the transient memory of the client computer 12,

along with the program code corresponding to a shell or library of API functions.

Alternatively, the protected program may remain in persistent memory 18 until and unless the server computer communicates an authorization signal to the shell program or library of API functions. Selection of a follower server from which to request authorization is described in a

5 related U.S. utility application entitled "System and Method for Selecting a Server in a Multiple Server License Management System," attorney docket no. 230074/0229, filed

_____, the contents of which are incorporated by reference herein. Alternatively, the protected program may remain in persistent memory 18 until and unless the server computer communicates an authorization signal to the shell program or library of API functions.

10 Loading of the shell program or library of API functions is preferably transparent to the user on the client computer 12 and, preferably, occurs in response to the user inputting a command to open the protected software (for example, by clicking a mouse button on an icon associated with the protected software).

As part of the function of the shell or library of API functions, a request is then
15 sent from the client computer 12 to follower server B for one or more authorizations to run the protected program. For purposes of this example, assume that client computer 12 requested only one authorization. Follower server B, under the control of the license management software, responds to the request by looking at its distribution table 36 to determine whether it has available allocations for Application v1.0. In the example of FIG. 5, follower server B has
20 30 allocations available, as represented by the available allocations record for each server in the pool (reference character 38) in the distribution table 36 for follower server B. Because it has available allocations, follower server B communicates an authorization message to the client computer 12. As illustrated in FIG. 6, once the authorization message is sent, the distribution table 36 is updated so that the available allocations record 38 for follower server B
25 decreases to 29, and the allocations in use record 42 for follower server B increases to one. If an insufficient number of allocations are available to completely satisfy the request, no authorizations are sent, and follower server B communicates another message back to the client computer 12, denying the request. In preferred embodiments, follower server B will then issue a borrow request in an attempt to borrow available allocations from another source.

Borrowing is described in a related U.S. utility application entitled "License Management System and Method with License Balancing," attorney docket no. 230074/0228, filed _____, the contents of which are incorporated by reference herein.

As noted above, in preferred embodiments of the present invention the leader
5 server always has a global picture of the distribution of allocations in the whole server pool. Thus, in the present example any changes to the distribution table of follower server B must be communicated to leader server A. In preferred embodiments, follower server B can determine the IP address for the leader server A from a leader priority list 46, which is configurable by the network administrator. It should be noted that in preferred embodiments, the IP address of
10 all license servers 14 in the server pool are stored in the leader priority list 46, a data structure separate from the license codes 26, to facilitate faster lookup. However, in alternative embodiments the IP addresses may be stored in a record associated with the license codes 26. In any case, after determining the IP address of the leader server A, follower server B communicates the fact that its available allocations count has dropped to 29 to leader server A,
15 and the distribution table of leader server A will be updated accordingly. Thus, as illustrated in FIG. 6, the distribution table 36 of leader server A reflects that the available allocations record 38 for follower server B has dropped to 29, the allocations in use record 42 for follower server B has increased to 1, and that the record for allocations available for all servers in the pool (see reference character 44) has dropped to 99.

20 The preceding discussion described a client computer 12 requesting and receiving authorization for running a protected software program from a networked license server 14. In the operating environment described above, the client computer 12 must remain connected to the network to continue to run the protected software program. For purposes of distinguishing the above-described system from embodiments of the present invention, the
25 authorizations described in the preceding discussion will be referred to hereinafter as "network" authorizations.

Commuter licensing will be described next according to embodiments of the present invention. Commuter licensing departs from the concept of requesting and granting a network authorization between license server 14 and client computer 12, and instead is

concerned with requesting and granting a "commuter" authorization between license server 14 and client computer 12. While a network authorization is managed by the issuing license server 14 and the server pool, commuter authorizations, once granted to a particular client computer 12, are managed both by the client computer 12 and also by the issuing license server 14. It should be noted, however, that although embodiments of the present invention described herein include a pool of license servers 14, in alternative embodiments only a single license server 14 is required for issuing commuter authorizations.

One practical application of commuter licensing according to embodiments of the present invention is for networks employing laptop or notebook client computers 12 that can readily be disconnected from the network. For example, prior to leaving for a business trip or working at home, a user can request a commuter authorization for one or more protected applications from a client computer 12 connected to the network. Once a commuter authorization is granted, the client computer 12 can be disconnected from the network, and can independently instantiate the protected application one or more times using the commuter authorization. This is in contrast to network authorizations, where a client computer 12 must request and receive a network authorization for each instantiation of the protected application.

As described earlier and illustrated in FIG. 8, a developer of a software program 50 to be protected must link the software program to a corresponding shell program code or library of API functions, referred to hereinafter as a client library 52. The linked software program 50 and client library 52 are then loaded onto a client computer 12. In preferred embodiments of the present invention, a user can request a commuter authorization for a particular protected software program 50 by running a separate utility 54 on a client computer 12 networked to the server pool. In preferred embodiments, this utility 54 enables the user to specify the license server 14 from which the commuter authorization will be requested, and the requested time duration of the commuter authorization. The utility 54 invokes the client library 52 associated with the requested software program 50, which first makes a local check to determine if the client library 52 has already received a commuter authorization. If it has, the utility 54 terminates. If it has not, then the client library 52 sends a request for a commuter authorization to the specified license server 14 in the server pool.

The request includes a "fingerprint," information that uniquely identifies the client computer 12 from which the request is made.

In alternative embodiments of the present invention, a user can also request a commuter authorization for a particular protected software program 50 by attempting to open the protected software program 50. In preferred embodiments, the client library 52 associated with the requested software program 50 first makes a local check to determine if the client library 52 has already received a commuter authorization. If it has, the protected software program 50 is opened, as will be described in greater detail below. If it has not, then the client library 52 sends a request for a commuter authorization to the specified license server 14 in the server pool, and once a commuter authorization is received, the protected software program 50 is opened. In alternative embodiments, the client library 52 does not make a local check, but immediately sends a request for a commuter authorization to the specified license server 14 in the server pool.

In preferred embodiments of the present invention, commuter authorizations and network authorizations can be simultaneously received and managed. Thus, a commuter authorization can be requested and received by a client computer 12 even though the client computer 12 may already have a network authorization for the same protected software program 50.

When a license server 14 receives a request for a commuter authorization, the license server 14, under the control of the license management software 22, responds to the request by looking at its distribution table 36 to determine whether it has an available allocation for Application v1.0. Continuing the example of FIG. 6 for purposes of illustration only, assume that a request for a commuter authorization has been made to follower server C. In the example of FIG. 6, follower server C has 30 allocations available, as represented by the available allocations record for each server in the pool (reference character 38) in the distribution table 36 for follower server C. Because it has an available allocation, follower server C sends a commuter authorization message to the client computer 12. As illustrated in FIG. 7, once the commuter authorization message is sent, the distribution table 36 is updated so that the available allocations record 38 for follower server C decreases to 29, and the

allocations in use record 42 for follower server C increases to one. In so doing, one of the available allocations for a network authorization has been effectively transformed into a commuter authorization.

It should be noted that in preferred embodiments of the present invention, follower server C may receive multiple requests for commuter authorizations from client computers 12, and may grant as many commuter authorizations as there are available allocations. However, if an insufficient number of allocations are available, in preferred embodiments follower server C may then issue a borrow request in an attempt to borrow an available allocation from another license server 14. In alternative embodiments, the network administrator or software developer may limit the number of commuter authorizations that may be issued as a percentage of the hard limit of allocations stored in the hard limit record 28 for a particular protected software program 50.

When a commuter authorization is sent to the client computer 12, additional commuter authorization information is also encrypted and sent to the client computer 12. As illustrated in FIG. 8, this commuter authorization information includes fingerprint information 60 which uniquely identifies the client computer 12 authorized to receive the commuter authorization, and a commuter authorization lifetime 56, which in preferred embodiments of the present invention is set to 30 days from the granting of the commuter authorization. In alternative embodiments, however, the commuter authorization lifetime 56 can be set by the system administrator to any value less than the remaining time of the license, as limited by the overall expiration date of the license. The commuter authorization information also includes a check-in value 58, which indicates whether the commuter authorization has been returned to the server pool. The commuter authorization lifetime 56 and the check-in value 58 are stored in persistent memory in both the issuing license server 14 and the client computer 12.

Other commuter authorization information may include, but is not limited to, the feature name and version, which identifies the protected software program for which a commuter authorization is granted, and a clock tampering value which, when enabled, allows the client library to detect attempts to tamper with the client computer's clock and invalidate

the commuter authorization if tampering is detected. In preferred embodiments of the present invention, the clock tampering value is enabled.

As noted above, in preferred embodiments of the present invention the leader server always has a global picture of the distribution of allocations in the whole server pool.

5 Thus, in the present example any changes to the distribution table of follower server C must be communicated to leader server A. Follower server C will therefore communicate the fact that its available allocations count has dropped to 29 to leader server A, and the distribution table of leader server A will be updated accordingly. Thus, as illustrated in FIG. 7, the distribution table 36 of leader server A reflects that the available allocations record 38 for follower server
10 C has dropped to 29, the allocations in use record 42 for follower server C has increased to 1, and that the record for allocations available for all servers in the pool (see reference character 44) has dropped to 98. Until the commuter authorization is returned or otherwise canceled, the hard limit of available allocations in the server pool is effectively decremented by one.

15 In addition, in alternative embodiments, the commuter authorization lifetime and the check-in value are communicated from follower server C to the other license servers 14 in the server pool and stored in memory so that even if follower server C should go down, the other license servers 14 in the server pool can take over the management of the issued commuter authorization.

20 Referring again to FIG. 8, once the commuter authorization is sent by the license server 14, it is received by the client library 52 that initiated the commuter authorization request. Once received, the client computer 12 can be disconnected from the network, because the commuter authorization information received by the client library 52 allows it to independently perform a function similar to a license server 14. Upon receiving a
25 subsequent or present request to run the protected software program 50, the client library 52 decides if it can authorize the client computer 12 to run the requested program 50 by decoding the commuter authorization information and comparing the fingerprint 60, commuter authorization lifetime 56, check-in value 58, and other information to parameters within the client computer 12. If authorization is permitted, then an instantiation of the protected software program 50 is opened. With a commuter authorization, the client library 52 can open

the protected software program 50 multiple times, including multiple simultaneous instantiations. It should be noted that once a commuter authorization has been received by the client library 52, all subsequent requests to open the protected software program 50 will be managed by the client library 52 without resorting to a networked license server 14, even
5 though the client computer 12 may still be connected to the network at that time.

The communication, or ping, that occurs between a client computer 12 that has received a network authorization from a license server 14 is described in a related U.S. utility application entitled "License Management System and Method with Multiple License Servers," attorney docket no. 230074/0227, filed _____, the contents of which are
10 incorporated by reference herein. In contrast, ping is disabled when a client computer 12 receives a commuter authorization from a license server 14. Because neither the client computer 12 nor the license server 14 will respond to the lack of ping when ping is disabled, communication between the client computer 12 and the server pool can cease for long periods of time.

At some point in time within the commuter authorization lifetime, the client
15 computer 12 may be re-connected to the network. In preferred embodiments of the present invention, a user may then return the commuter authorization to the network by running a utility 54 that invokes the client library 52 associated with the requested software program 50 and selecting a check-in function. The client library 52 responds by sending a commuter
20 authorization check-in message to the license server 14 that initially granted the commuter authorization. At that time, the check-in value 58 within both the client library 52 and license server 14 is set to indicate that the commuter authorization has been checked in. Thereafter, the commuter authorization is disabled. Furthermore, within the license server 14, the number of available allocations is incremented by one, and this change communicated to the leader
25 server. If the granting license server is down at the time the client library sends the commuter authorization check-in message, this message will be sent to another license server in the pool, and check-in will be managed by that license server. In alternative embodiments, however, rather than checking in the commuter authorization, the commuter authorization is held by the client library 52 for the full term of the commuter authorization lifetime.

It is also possible that the client computer 12 may not be re-connected to the network and may not return the commuter authorization to the issuing license server 14 within the commuter authorization lifetime. As noted above, the commuter authorization lifetime and the check-in value 58 are stored in persistent memory in both the license server 14 and the client computer 12. Thus, if the commuter authorization lifetime ends prior to the return of the commuter authorization, the check-in value 58 within the client library 52 and license server 14 is automatically set to indicate that the commuter authorization has been checked in. Thereafter, the commuter authorization is disabled. Within the license server 14, the number of available allocations is incremented by one, and this change communicated to the leader server. If the granting license server is down and the commuter authorization lifetime ends prior to the return of the commuter authorization, another license server will manage the automatic check-in of the commuter authorization.

Situations may occur where a user operating a client computer 12 remote from the network may need to obtain a commuter authorization. In alternative embodiments of the present invention, this can be accomplished by communicating with the network administrator. A user desiring to obtain a commuter authorization for a particular client computer 12 disconnected from the network first invokes a utility which generates fingerprint information 60 for the client computer 12. This fingerprint information 60 is conveyed to the network administrator through non-networked communications such as by telephone, e-mail, or the like. In addition, other information such as the requested software program is communicated to the network administrator. Other information that may also be conveyed includes the license server 14 from which the commuter authorization will be requested, and the requested time duration of the commuter authorization.

The network administrator then runs a utility 62 on any of the license servers 14 in the server pool that effectively sends a request for a commuter authorization to the targeted license server 14. If, as described earlier, an available allocation is found, the distribution table 36 is updated so that the available allocations record 38 for the targeted license server is decreased by one, and the allocations in use record 42 is increased by one. The commuter authorization lifetime 56 and the check-in value 58 are stored in persistent memory in the

license server 14. In so doing, one of the available allocations for a network authorization has been effectively transformed into a commuter authorization. The network administrator is then provided encrypted commuter authorization information as described above.

5 This encrypted commuter authorization information is conveyed to the user of the remote client computer 12 through non-networked communications such as by telephone, e-mail, or the like. The user then enters this information into the utility, which decodes and provides this information to the client library 52 linked to the requested software program 50. At this point, the commuter authorization has been received, and thereafter both the client computer 12 and the server pool manage the commuter authorization in the usual manner as
10 described above.

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15 Therefore, embodiments of the present invention provide an improved license management system and method for more efficiently managing licenses on a network using a pool of multiple license servers. Embodiments of the present invention provide a system and method for managing licenses on a network that allows a client computer to request and receive a commuter authorization from a license server while connected to the network, which allows the client computer to run a protected software program even if the client computer should become disconnected from the network. In addition, embodiments of the present invention provide a system and method for managing licenses on a network that allows a client computer to request and receive a commuter authorization from a license server while disconnected from
20 the network, allowing the client computer to run a protected software program while disconnected from the network.

What is claimed is:

- 1 1. A system for managing licenses for protected software on a
2 communication network, the system comprising:
3 at least one client computer capable of being coupled to the
4 communication network for requesting a commuter authorization to use the protected software
5 and for storing a commuter authorization lifetime representing a time period for which the
6 commuter authorization is valid; and
7 at least one license server coupled to the communication network, each
8 license server programmed for managing a distribution of allocations to use the protected
9 software and at least one license server programmed for granting a commuter authorization in
10 response to a request for a commuter authorization;
11 wherein after a commuter authorization is communicated from a granting
12 license server to a requesting client computer, the requesting client computer may use the
13 protected software while coupled to or decoupled from the communication network until the
14 commuter authorization lifetime expires.
- 1 2. A system as recited in claim 1, wherein while the requesting client
2 computer maintains a valid commuter authorization, the requesting client computer may open
3 the protected software multiple times, including simultaneous instantiations of the protected
4 software.
- 1 3. A system as recited in claim 1, the at least one license server further
2 programmed for granting a commuter authorization to the requesting client computer and
3 decrementing a count of available allocations only if there is an available allocation in the at
4 least one license server.

1 4. A system as recited in claim 3, the requesting client computer further
2 including memory for storing commuter authorization information including the commuter
3 authorization lifetime and a check-in value received from the granting license server when the
4 granting license server grants the commuter authorization to the requesting client computer;
5 and

6 the granting license server further including memory for storing
7 commuter authorization information including the commuter authorization lifetime and a
8 check-in value when the granting license server grants the commuter authorization to the
9 requesting client computer.

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1 5. A system as recited in claim 4, the requesting client computer
2 programmed for returning the commuter authorization by setting its check-in value to a
3 returned state and communicating a check-in message to the granting license server; and
4 the granting license server further programmed for setting its check-in
5 value to the returned state and incrementing its count of available allocations upon receipt of
6 the check-in message.

1 6. A system as recited in claim 5, wherein if the commuter authorization is
2 not returned prior to an expiration of the commuter authorization lifetime, at the expiration of
3 the commuter authorization lifetime:

4 the requesting client computer is further programmed for setting its
5 check-in value to a returned state; and

6 the granting license server is further programmed for setting its check-in
7 value to the returned state and incrementing its count of available allocations.

1 7. A system as recited in claim 1, the requesting client computer
2 programmed for enabling a user to select the commuter authorization lifetime.

1 8. A system as recited in claim 1, the requesting client computer
2 programmed for enabling a user to select the license server from which to request a commuter
3 authorization.

1 9. A system as recited in claim 4, the at least one license server comprising
2 a pool of license servers, and
3 the granting license server further programmed for communicating the
4 commuter authorization lifetime and the check-in value stored in the granting license server to
5 other license servers in the pool when the granting license server grants the commuter
6 authorization to the requesting client computer, so that even if the granting license server
7 should go down, another license server in the pool can act as the granting license server.

1 10. A system as recited in claim 1, the requesting client computer further
2 programmed for detecting attempts to tamper with its internal clock and invalidating the
3 commuter authorization if tampering is detected.

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11. A method for managing licenses for protected software on a communication network, the method comprising the steps of:

- coupling at least one client computer and at least one license server to the communication network;
- communicating a request for a commuter authorization to use the protected software from the at least one client computer to the at least one license server over the communication network;
- granting a commuter authorization to the at least one client computer from the at least one license server and decrementing a count of available allocations within the at least one license server only if there is an available allocation in the at least one license server; and
- storing a commuter authorization lifetime representing a time period for which the commuter authorization is valid within the at least one client computer;

wherein after a commuter authorization is communicated from a granting license server to a requesting client computer, the requesting client computer may use the protected software while coupled to or decoupled from the communication network until the commuter authorization lifetime expires.

12. A method as recited in claim 11, wherein while the requesting client computer maintains a valid commuter authorization, the requesting client computer may open the protected software multiple times, including simultaneous instantiations of the protected software.

1 13. A method as recited in claim 11, the step of granting a commuter
2 authorization to the at least one client computer from the at least one license server further
3 including the steps of:
4 communicating the commuter authorization lifetime and a check-in value
5 from the granting license server to the requesting client computer; and
6 storing the commuter authorization lifetime and the check-in value in the
7 requesting client computer and the granting license server.

1 14. A method as recited in claim 13, wherein when the protected software is
2 no longer needed, the method further includes the steps of:
3 returning the commuter authorization by setting the check-in value stored
4 in the requesting client computer to a returned state and communicating a check-in message to
5 the granting license server; and
6 setting the check-in value stored in the granting license server to the
7 returned state and incrementing the count of available allocations stored in the granting license
8 server when the granting license server receives the check-in message.

1 15. A method as recited in claim 14, wherein if the commuter authorization
2 is not returned prior to an expiration of the commuter authorization lifetime, at the expiration
3 of the commuter authorization lifetime the method further includes the steps of:
4 setting the check-in value stored in the requesting client computer to a
5 returned state; and
6 setting the check-in value stored in the granting license server to the
7 returned state and incrementing the count of available allocations stored in the granting license
8 server.

1 16. A method as recited in claim 11, the step of communicating a request for
2 a commuter authorization to use the protected software further including the step of selecting
3 the commuter authorization lifetime.

1 17. A method as recited in claim 11, the step of communicating a request for
2 a commuter authorization to use the protected software further including the step of selecting
3 the license server from which to request a commuter authorization.

1 18. A method as recited in claim 13, the at least one license server
2 comprising a pool of license servers, the method further including the steps of:
3 communicating the commuter authorization lifetime and the check-in value
4 stored in the granting license server to other license servers in the pool when the granting
5 license server grants the commuter authorization to the requesting client computer, so that even
6 if the granting license server should go down, another license server in the pool can act as the
7 granting license server.

1 19. A method as recited in claim 11, further including the step of detecting
2 attempts to tamper with an internal clock of the requesting client computer and invalidating the
3 commuter authorization if tampering is detected.

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ABSTRACT

A system for managing licenses for protected software on a communication network is disclosed. The system includes at least one client computer that is capable of being coupled to or decoupled from the communication network. While coupled to the communication network, a user of the client computer may request a commuter authorization to use the protected software. At least one license server is also coupled to the communication network. Each license server is programmed for managing a distribution of allocations to use the protected software. In addition, at least one of the license servers is programmed for granting a commuter authorization in response to a request for a commuter authorization from a client computer if there is an available authorization. After a commuter authorization is received by a client computer, the client computer stores a commuter authorization lifetime representing a time period for which the commuter authorization is valid. The client computer may then use the protected software while coupled to or decoupled from the communication network until the commuter authorization lifetime expires.

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FIG. 1

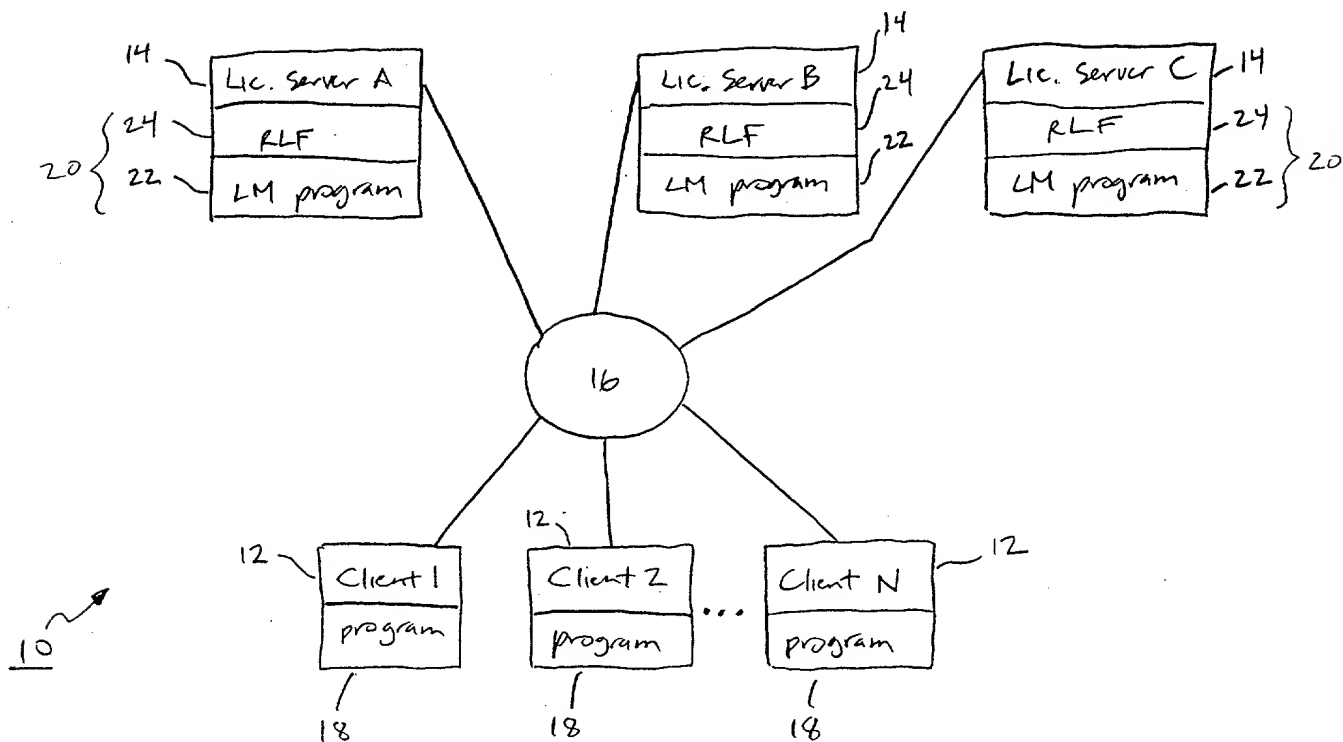


FIG. 2

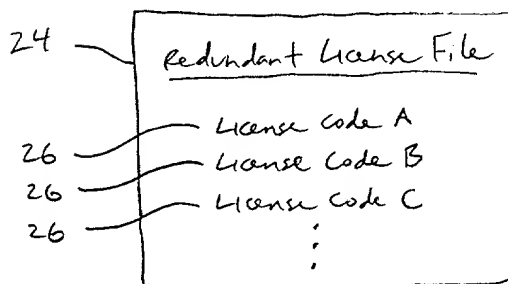


FIG. 3

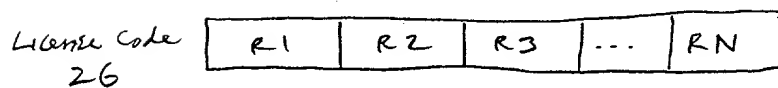
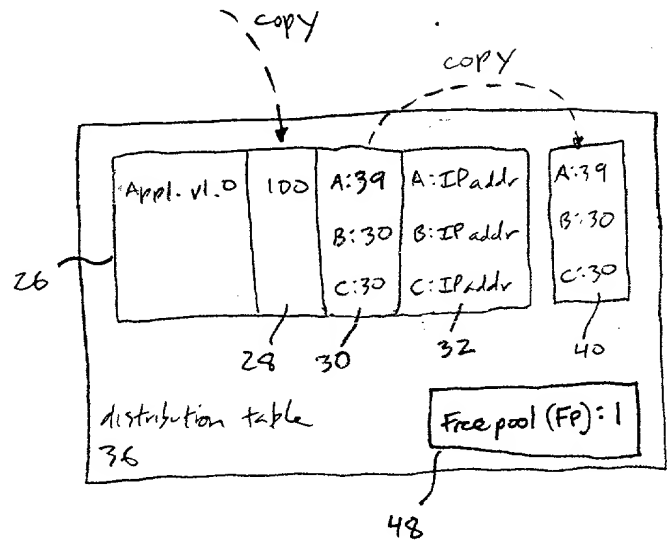
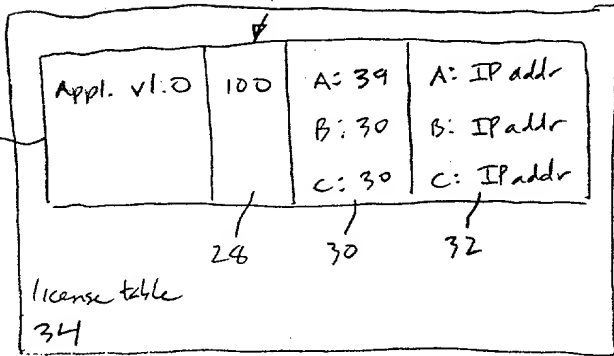
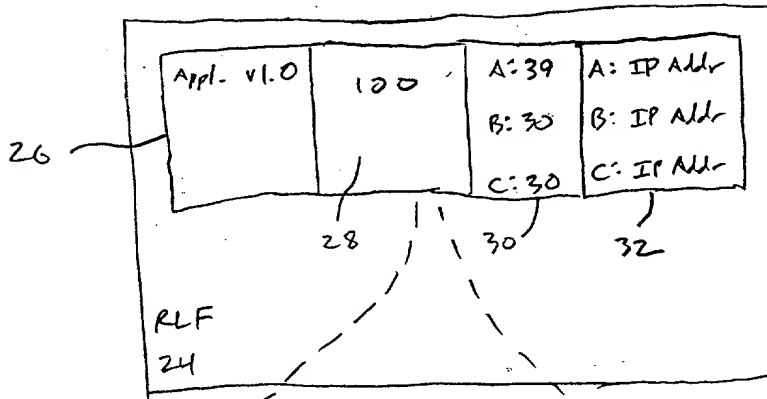


FIG. 4



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FIG. 5

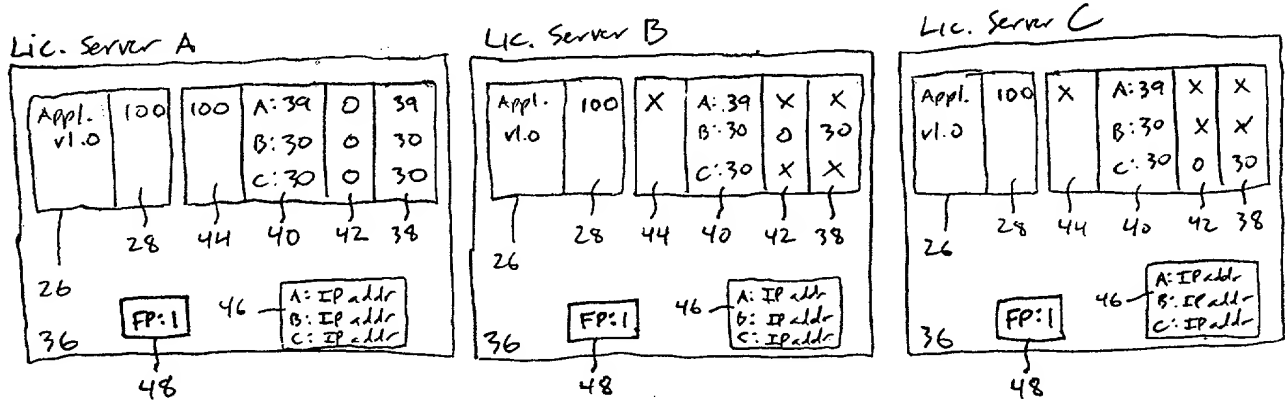


FIG. 6

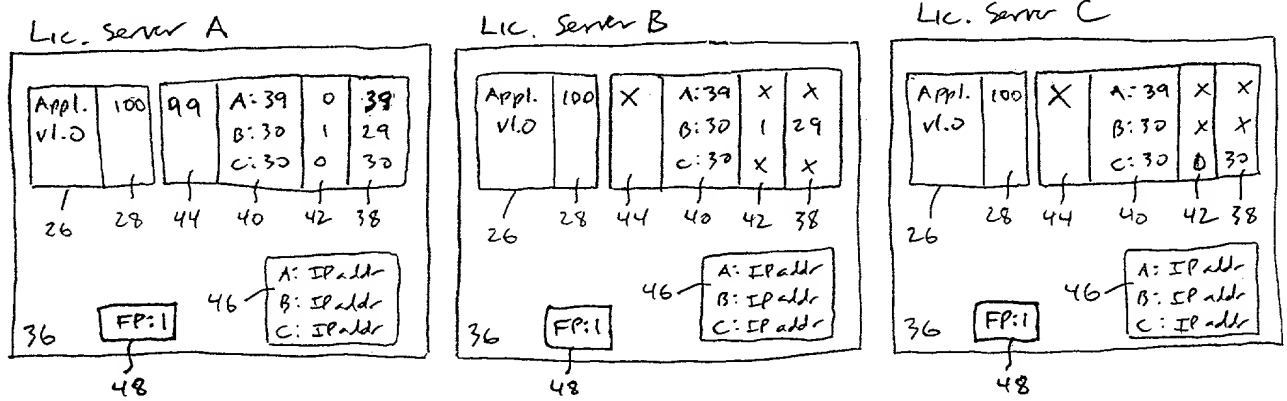


FIG. 7

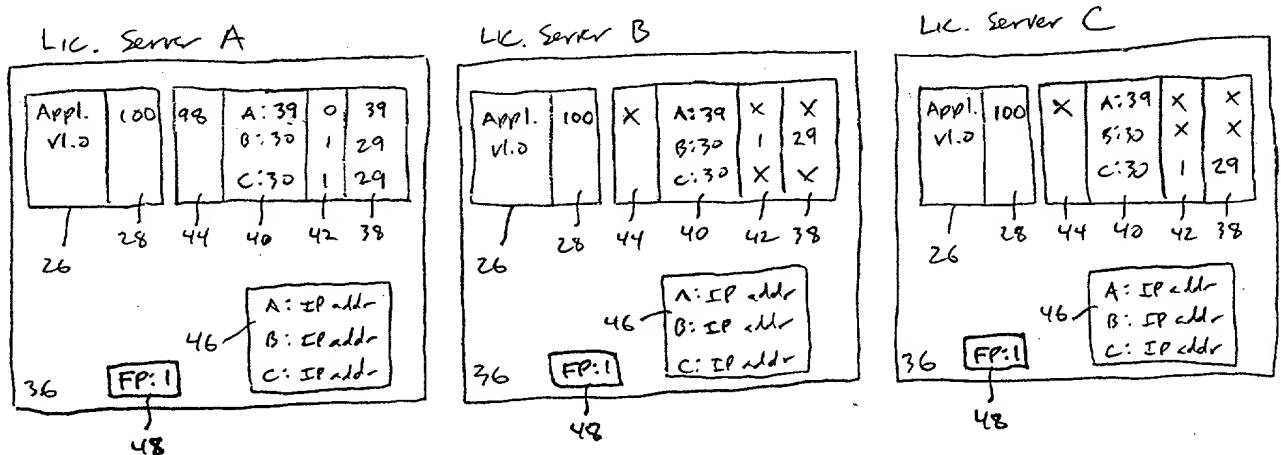
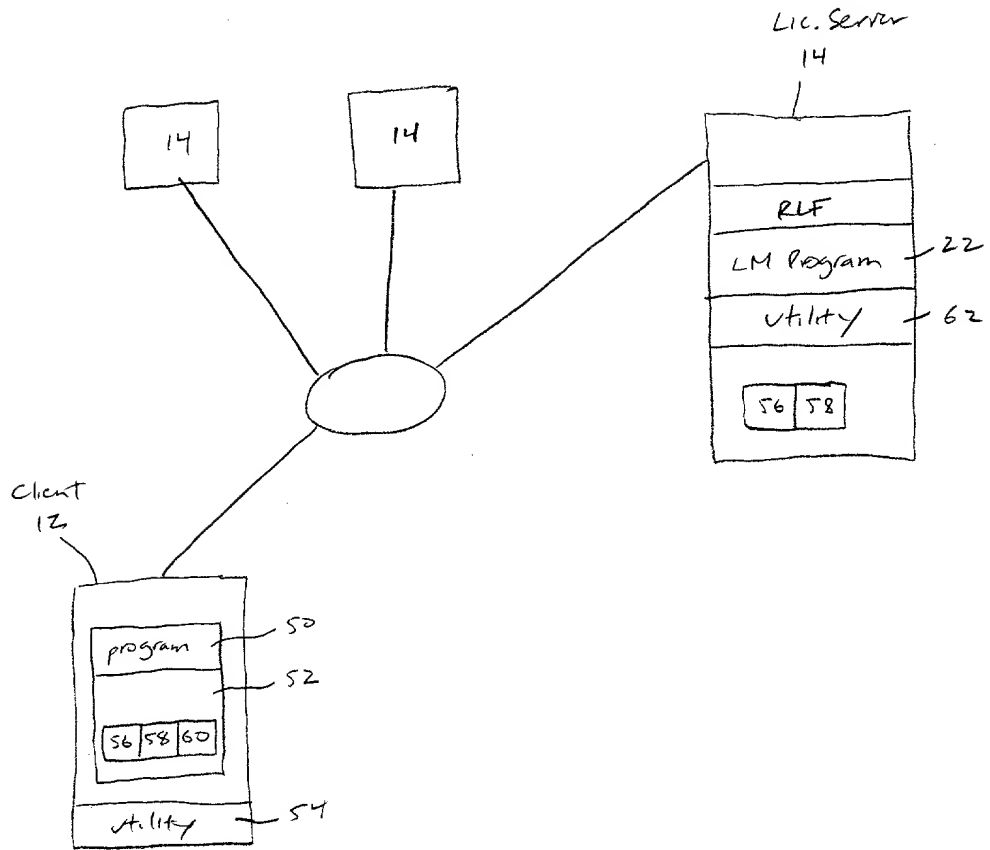


FIG. 8



United States Patent Application

DECLARATION UNDER 37 C.F.R. § 1.63

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **LICENSE MANAGEMENT SYSTEM AND METHOD FOR COMMUTER LICENSING**

The specification of which

- a. ☒ is attached hereto.
 b. ☐ was filed on _____ as Application Serial No. _____, which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
 b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/152,785	September 3, 1999

Attorney Docket No. 230074.0230

se direct all correspondence in this case to Ted R. Rittmaster, Esq. at the address indicated below:

Ted R. Rittmaster, Esq.
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2029 Century Park East - Suite 3500
Los Angeles, CA 90067-3021

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Signature of Inventor 205:			Date:	

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Signature of Inventor 207:			Date:	

2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
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8	Post Office Address	Post Office Address	City	State & Zip Code/Country
Signature of Inventor 208:			Date:	

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
 - (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.
- (b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and
- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;
or
 - (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

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(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

005588-023000

United States Patent Application

DECLARATION UNDER 37 C.F.R. § 1.63

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **LICENSE MANAGEMENT SYSTEM AND METHOD FOR COMMUTER LICENSING**

The specification of which

- a. ☒ is attached hereto.
 b. ☐ was filed on _____ as Application Serial No. _____, which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
 b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/152,785	September 3, 1999

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Amey Glen Noron
 from: [unclear] / [unclear]

Attorney Docket No. 230074.0230

Please direct all correspondence in this case to Ted R. Rittmaster, Esq. at the address indicated below:

Ted R. Rittmaster, Esq.
 Foley & Lardner
 2029 Century Park East - Suite 3500
 Los Angeles, CA 90067-3021

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
		REDDING	MARK	E
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
		Newport Beach	California	United States of America
1	Post Office Address	Post Office Address	City	State & Zip Code/Country
		1132 Baypointe Dr.	Newport Beach	California 92660/U.S.A.
Signature of Inventor 201:				Date:
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
		RADIA	LOGAN	A.
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
		Fullerton	California	United States of America
2	Post Office Address	Post Office Address	City	State & Zip Code/Country
		3401 Puente St.	Fullerton	California 92835/U.S.A.
Signature of Inventor 202:				Date:
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
		HANDA	SANDEEP	NMI
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
		New Delhi	India	India
3	Post Office Address	Post Office Address	City	State & Zip Code/Country
		26, Aruba Kunj, Sector-13, Rohini	New Delhi	India
Signature of Inventor 203: sandeep handa				Date: 08/22/2000
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
		SHARMA	HEMANT	NMI
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
		Lake Forest	California	India
4	Post Office Address	Post Office Address	City	State & Zip Code/Country
		26571 Normandale Drive	Lake Forest	California 92630/U.S.A.
Signature of Inventor 204:				Date:

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91 11 6107257

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P.01

2	Full Name Of Inventor	Family Name CHOPRA	First Given Name SANJAY	Second Given Name NMI
0	Residence & Citizenship	City New Delhi	State or Foreign Country India	Country of Citizenship India
5	Post Office Address	Post Office Address C/o Viman Software India Pvt. Ltd., GF, STP, NSIC Complex, NSIC Bhawan, Okhla Industrial Estate	City New Delhi	State & Zip Code/Country India
Signature of Inventor 205:			Date:	
2	Full Name Of Inventor	Family Name GUPTA	First Given Name RANA	Second Given Name NMI
0	Residence & Citizenship	City Haryana	State or Foreign Country India	Country of Citizenship India
6	Post Office Address	Post Office Address 801, Sector-17, Gurgaon	City Haryana	State & Zip Code/Country India
Signature of Inventor 206:			Date:	
2	Full Name Of Inventor	Family Name LAL	First Given Name POONAM	Second Given Name NMI
0	Residence & Citizenship	City Haryana	State or Foreign Country India	Country of Citizenship India
7	Post Office Address	Post Office Address B-34B, DLF, Sector-14, Gurgaon	City Haryana	State & Zip Code/Country India
Signature of Inventor 207:			Date:	
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
8	Post Office Address	Post Office Address	City	State & Zip Code/Country
Signature of Inventor 208:			Date:	

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

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 - or
 - (2) It refutes, or is inconsistent with, a position the applicant takes in:
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United States Patent Application

DECLARATION UNDER 37 C.F.R. § 1.63

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **LICENSE MANAGEMENT SYSTEM AND METHOD FOR COMMUTER LICENSING**

The specification of which

- a. ☒ is attached hereto.
 b. ☐ was filed on _____ as Application Serial No. _____, which I have reviewed and for which I solicit a United States patent.

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- a. ☒ no such applications have been filed.
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FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
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I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/152,785	September 3, 1999

Please direct all correspondence in this case to Ted R. Rittmaster, Esq. at the address indicated below:

Ted R. Rittmaster, Esq.
Foley & Lardner
2029 Century Park East – Suite 3500
Los Angeles, CA 90067-3021

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

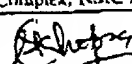
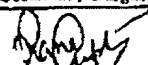

2	Full Name Of Inventor	Family Name REDDING	First Given Name MARK	Second Given Name E.
0	Residence & Citizenship	City Newport Beach	State or Foreign Country California	Country of Citizenship United States of America
1	Post Office Address	Post Office Address 1132 Baypointe Dr.	City Newport Beach	State & Zip Code/Country California 92660/U.S.A.
Signature of Inventor 201:				Date:
2	Full Name Of Inventor	Family Name BADIA	First Given Name LOGAN	Second Given Name A.
0	Residence & Citizenship	City Fullerton	State or Foreign Country California	Country of Citizenship United States of America
2	Post Office Address	Post Office Address 3401 Puente St.	City Fullerton	State & Zip Code/Country California 92835/U.S.A.
Signature of Inventor 202:				Date:
2	Full Name Of Inventor	Family Name HANDA	First Given Name SANDEEP	Second Given Name NMI
0	Residence & Citizenship	City New Delhi	India	Country of Citizenship India
3	Post Office Address	Post Office Address 26, Aroha Kunj, Sector-13, Rohini	City New Delhi	State & Zip Code/Country India
Signature of Inventor 203:				Date:
2	Full Name Of Inventor	Family Name SHARMA	First Given Name HEMANT	Second Given Name NMI
0	Residence & Citizenship	City Lake Forest	State or Foreign Country California	Country of Citizenship India
4	Post Office Address	Post Office Address 26571 Normandale Drive	City Lake Forest	State & Zip Code/Country California 92630/U.S.A.
Signature of Inventor 204:				Date:

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P.02

Attorney Docket No. 230074.0230

2	Full Name Of Inventor	Family Name CHOPRA	First Given Name SANJAY	Second Given Name NMI
0	Residence & Citizenship	City New Delhi	State or Foreign Country India	Country of Citizenship India
5	Post Office Address	Post Office Address C/o Viman Software India Pvt. Ltd., GF, STP, NSIC Complex, NSIC Bhawan, Okhla Industrial Estate	City New Delhi	State & Zip Code/Country India
Signature of Inventor 205: 			Date: 08/22/2000	
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0	Residence & Citizenship	City Haryana	State or Foreign Country India	Country of Citizenship India
6	Post Office Address	Post Office Address 801, Sector-17, Gurgaon	City Haryana	State & Zip Code/Country India
Signature of Inventor 206: 			Date: 08-22-2000	
2	Full Name Of Inventor	Family Name LAL	First Given Name POONAM	Second Given Name NMI
0	Residence & Citizenship	City Haryana	State or Foreign Country India	Country of Citizenship India
7	Post Office Address	Post Office Address A-34B, DLF, Sector-14, Gurgaon	City Haryana	State & Zip Code/Country India
Signature of Inventor 207: 			Date: 08-22-2000	
2	Full Name Of Inventor	Family Name	First Given Name	Second Given Name
0	Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
8	Post Office Address	Post Office Address	City	State & Zip Code/Country
Signature of Inventor 208:			Date:	

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P.02

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

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or
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(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

005280 20534950

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Mark Redding et al.	Examiner:	Unassigned
Serial No.:	Unassigned	Group Art Unit:	Unassigned
Filed:	Concurrently herewith	Docket No.:	230074.0230
Title:	LICENSE MANAGEMENT SYSTEM AND METHOD FOR COMMUTER LICENSING		

**POWER OF ATTORNEY BY ASSIGNEE
AND EXCLUSION OF INVENTOR UNDER RULE 37 CFR § 3.71**

The undersigned, Walter Straub, is a representative authorized to sign on behalf of the assignee of the entire interest in the above-identified subject application, RAINBOW TECHNOLOGIES, INC., and hereby appoints:

To:	Foley & Lardner	David A. Blumenthal	Reg. No. 26,257
		Ted R. Rittmaster	Reg. No. 32,933
		Ronald Coslick	Reg. No. 36,489
		Glenn M. Kubota	Reg. No. 44,197

all of the firm of Foley & Lardner, as its attorneys to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, said appointment to be to the exclusion of the inventor and his attorney in accordance with the provisions of Rule 32 of the Patent Office Rules of Practice.

RAINBOW TECHNOLOGIES, INC., per 37 C.F.R. § 3.73(b), certifies that the evidentiary documents with respect to its ownership have been reviewed and that to the best of the undersigned's knowledge and belief, title is in the assignee seeking this action.

RAINBOW TECHNOLOGIES, INC., declares that 100% ownership is established by the assignment filed for recordation herewith, a copy of which is attached.

Please direct all telephone calls to 310-277-2223 and all correspondence relative to said application to the following address:

Ted R. Rittmaster
FOLEY & LARDNER
Suite 3500
2029 Century Park East
Los Angeles, CA 90067-3021

ASSIGNEE: **RAINBOW TECHNOLOGIES, INC.**

Signature:	<u>Walter Straub</u>
Typed Name:	<u>Walter Straub</u>
Title:	<u>Chief Executive Officer</u>
Address:	<u>50 Technology Drive</u>
	<u>Irvine, CA 92618</u>

Date: August 15, 2000